

Unit 5 Review

In addition to knowing vocab definitions, be sure you can apply them to understand the following:

Ch 11

- Mendel's Laws
 - What did Mendel conclude about inheritance based on his work with pea plants?
 - What is the difference between the law of segregation and law of independent assortment?
 - In meiosis, when does independent assortment occur?
 - The law of independent assortment only applies to genes located where?
 - What is meant by a dihybrid vs monohybrid cross?
 - What are the resulting phenotypic ratios?
 - For one and two factor crosses, be able to
 - Determine how many/what gametes are possible
 - Predict genotypes and phenotypes of offspring (and their probabilities) based on parents
 - Predict genotypes/phenotypes of parents based on offspring
- Laws of Probability
 - Using laws of probability for larger crosses, be able to
 - Determine how many/what gametes are possible
 - Predict probabilities of various genotypes and phenotypes of offspring
- More Complex Patterns of Inheritance
 - Be able to distinguish between the following patterns of inheritance
 - Complete dominance
 - Incomplete dominance
 - Codominance
 - Multiple alleles
 - Polygenic inheritance
 - For each of the inheritance patterns listed above, be able to
 - Determine how many/what gametes are possible
 - Predict genotypes and phenotypes of offspring (and their probabilities) based on parents
 - Predict genotypes/phenotypes of parents based on offspring
 - Be familiar with examples of each type of inheritance
- Pedigrees
 - Be able to interpret pedigrees
 - Explain the difference between recessively vs dominantly inherited disorders
 - Examples
 - Determining which pattern is shown in a pedigree
 - Predict likelihood of 2 parents have a child with a disorder based on their family history

Ch 12

- Chromosome Theory of Inheritance
 - What is it?
 - How does it relate to meiosis?
- Sex-linked Genes
 - Why are males affected more often?
 - Which parents can pass X-linked alleles onto which children (gender)?
 - What are common examples of disorders caused by recessive alleles on the X chromosome?
 - How does X inactivation affect phenotypes?
 - For X-linked crosses, be able to
 - Predict genotypes and phenotypes of offspring (and their probabilities) based on parents
 - Predict genotypes/phenotypes of parents based on offspring
 - Be able to interpret sex-linked pedigrees
- Linked Genes
 - Why are certain genes typically inherited together?
 - What % frequency of recombination is observed for genes on different chromosomes?
 - Why?
 - What mechanism allows for recombination of linked genes?
 - How does gene location affect the probability of such recombinations?
 - How do map units relate to recombination frequency?
 - Chi square test
 - How can this statistical test be used to determine if two genes are linked or unlinked?
- Abnormal Chromosome Numbers
 - How many chromosomes does each daughter cell inherit if nondisjunction occurs during meiosis I vs meiosis II?
 - What is the difference between deletions, duplications, inversions, and translocations?
 - How do these errors occur?
 - What problems can occur as a result of aneuploidy of autosomes vs sex chromosomes?

Chi Square Test

- There will be a chi square problem on your test worth 10 points
- Practice various problems involving various inheritance patterns
- You will have to
 - Write a null hypothesis
 - Formalize your thinking with a contingency box
 - Know how to come up with the expected values!
 - Calculate your chi square value
 - Determine the critical chi square value for comparison
 - Draw a conclusion
 - Accept/reject null and WHY
 - EXPLAIN what this means!